

EVIDENCE BRIEF

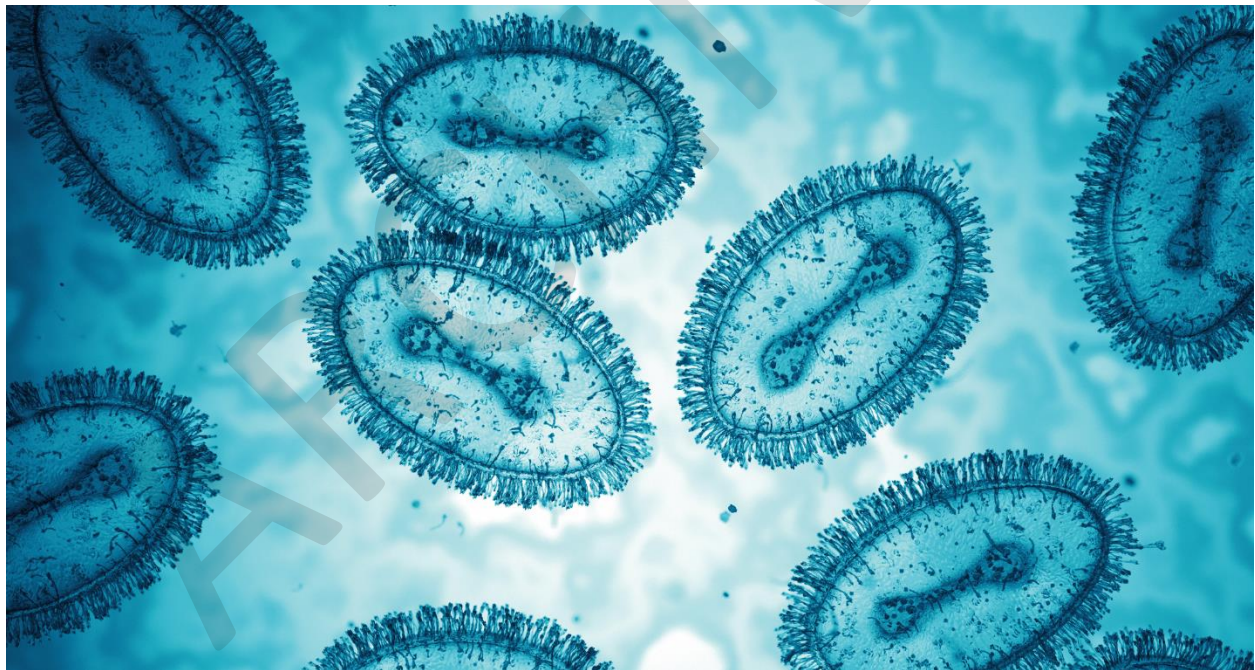
(ARCHIVED) Monkeypox Transmission Through Genital Excretions

Published: August 2022

Archived: March 2023

ARCHIVED DOCUMENT

This archived content is being made available for historical research and reference purposes only. The content is no longer being updated and it may not reflect current evidence or guidance.



Key Messages

- There is no clear evidence on genital excretions as a distinct route of transmission independent of direct contact during intimate or sexual contact. Two recent case series report the presence of monkeypox DNA (not viral isolates) in seminal fluid during active infection. No studies were found examining monkeypox DNA in vaginal excretions.
- As a precautionary measure, several jurisdictions and international organizations recommend that monkeypox cases utilize barrier contraception methods (e.g., condoms) during sexual intercourse (receptive and insertive oral/anal/vaginal) for 8 – 12 weeks following the clinical resolution of illness.
- Given limited data on transmission of monkeypox through genital excretions, abstaining from sexual intercourse during active infection is recommended. A cautious approach that recommends cases utilize barrier contraception methods during sexual intercourse for 8 – 12 weeks following resolution of their infection should be considered pending the availability of further scientific evidence.

Issue and Research Question

This Evidence Brief summarizes current evidence on monkeypox transmission via genital excretions (i.e. seminal fluids, vaginal fluids) and present a series of case management guidance options. Out of scope was a review of routes of monkeypox transmission through other bodily fluids (e.g. blood, breast milk, urine, or saliva).

Background

Monkeypox is a viral zoonotic disease caused by the monkeypox virus, an enveloped DNA virus within the Orthopoxvirus genus. Since May 2022, monkeypox infections have been confirmed in individuals with no known travel history to endemic regions. These cases were discovered in non-endemic regions including Canada, the United States, the United Kingdom, and continental Europe.

Please refer to PHO's document entitled Synthesis: Multi-Jurisdictional Monkeypox Outbreak 2022 – What We Know So Far for detailed background information on the origin of monkeypox, routes of transmission, clinical presentation, emerging epidemiological trends, and case and contact management practices.¹

Monkeypox can spread from person-to-person through respiratory secretions or through close, physical contact with someone who has monkeypox, especially from contact with the lesion(s)/scab(s) and/or bodily fluids (e.g. saliva). Monkeypox may also spread through direct contact with contaminated materials (e.g. clothing, bedding, towels, eating utensils, and dishes). Other known routes of transmission include animal-to-human and vertical transmission from mother-to-fetus. Historically, genital excretions have not been a known route of transmission for the monkeypox virus.¹

During the current global outbreak of monkeypox, the majority of cases have been reported in men who have sex with men (MSM).¹ Many cases have presented to primary care or sexual health clinics. Given this emerging trend, there have been concerns about the potential for sexual transmission including through genital excretions such as seminal or vaginal fluids.

Methods

The PHO Library Services team performed comprehensive searches of the peer-reviewed, pre-print, and grey literature. Given the limited data on monkeypox transmission, no date restrictions were applied, with the search including results up to July 11, 2022. Keywords encompassed an extensive list of poxviruses, sexual transmission through genital fluids or secretions, and various methods of barrier contraception. Inclusion criteria included articles on orthopoxviruses (including smallpox and cowpox) in humans only, specifically related to transmissibility via genital excretions.

The complete list of search results included 275 peer-reviewed articles, articles from secondary databases, and pre-prints. All articles were double-screened by title and abstract prior to a full-text review of relevant articles. In total, 5 articles were included in this Evidence Brief.

A search of the grey literature from reputable public health organizations including the World Health Organization (WHO), the European Centre for Disease Prevention and Control (ECDC), the United States Centers for Disease Control (CDC), the Public Health Agency of Canada (PHAC), the United Kingdom Health Security Agency (UKHSA) and other national or subnational public health agencies was also performed.

Main Findings

Evidence for Transmission During Active Infection

Our search identified five articles related to the potential transmission of monkeypox or related poxviruses through genital excretions during the period of communicability (from the first symptom of illness until all lesions have scabbed over and new skin has formed underneath). These studies only assessed seminal fluids (i.e. no studies examined monkeypox transmission through vaginal excretions).

A 2022 peer-reviewed article² studying 6 monkeypox clusters across Italy, Australia, the Czech Republic, Portugal, and the UK conducted a pooled analysis of 124 cases. The authors report that “sexual exposure could be documented in 91.67% of the cases” and that “sexual intercourse was unprotected (condomless) with multiple, random/anonymous sexual partners”. Despite a lack of clear evidence regarding sexual transmission, the authors note that “most cases reported genital and/or perianal lesions, suggesting that sexual intercourse is likely to play a key role”.

A 2022 case series³ from Italy examined monkeypox cases in 4 men. All 4 patients had travelled in the preceding month and engaged in condomless sex with other male partners. Samples taken from the patients’ genital lesions and seminal fluid tested positive for monkeypox DNA through real-time PCR. The authors noted that while “these findings cannot be considered definitive evidence of infectivity, they demonstrate viral shedding whose efficiency in terms of transmission cannot be ruled out”. They also determined that “the quantification cycle values in semen of our patients were in the range of those measured in their nasopharyngeal swabs”.

A 2022 case report⁴ from Italy examined 1 monkeypox case in a male patient. Monkeypox virus DNA was detected in the cases’ seminal fluid collected on Day 10 post symptoms onset, however viral isolation was negative.

A 2022 pre-print case series⁵ from Germany examined 2 men who tested positive for monkeypox following sexual activity with other men. Analyses of semen samples from both cases revealed the presence of monkeypox DNA alone without the presence of viral isolates. The authors noted that they “were able to isolate monkeypox virus only from the contents of skin pustules” but that “other routes of transmission of monkeypox virus should nevertheless be further investigated”.

A 2022 letter to the editor⁶ from the UK identified 2 men with monkeypox who were sexual partners with no travel history to monkeypox-endemic regions. The pair had condomless anal and oro-anal sex. Both patients developed perioral lesions and painful perianal or genital lesions consistent with the areas of sexual contact. The study authors remarked that “ten days prior to sexual contact, Patient 1 reported kissing an unrelated individual who had a crusted oral lesion”.

Evidence for Transmission Following Resolution of Infection

Our rapid review of the peer-reviewed literature, pre-prints, and grey literature did not reveal any evidence on the transmission of monkeypox following a resolved infection including isolation of DNA or virus from genital excretions.

Jurisdictional Scans

Active infection guidance

Most national jurisdictions such as Canada⁷ and the United States⁸ recommend self-isolation for monkeypox cases and the avoidance of close contact – including sexual contact – during active infection. These measures should be upheld until all scabs have fallen off and new intact skin has formed below. The WHO’s recommendations on infection prevention and control also includes a section on abstinence from sexual activity during an active infection.⁹

Post-infection guidance

The PHAC recommends that “after being deemed no longer contagious, cases should wear a condom during any sexual activity for 12 weeks.”⁷

The UKHSA¹⁰ “is now advising people to use condoms for 12 weeks after infection” as a precautionary measures to reduce the risk to sexual partners.

The WHO recommends “the use of condoms consistently during sexual activity (receptive and insertive oral/anal/vaginal) for 12 weeks after recovery to prevent the potential transmission of monkeypox”.

- The WHO situation update from June 10, 2022 notes that “the modes of transmission during sexual contact remain unknown” and that “it is unclear what role sexual bodily fluids, including semen and vaginal fluids, play in the transmission of Monkeypox.”¹¹
- The WHO Clinical Management and Infection Prevention and Control for Monkeypox guidance document states that “small case series have reported MPX virus DNA detection in bodily fluids after healing of skin lesions; this raises uncertainty about the persistence of MPX virus in bodily fluids such as semen, vaginal fluids, saliva and blood, and the risk of onward transmission”.⁹
 - *Note:* The WHO document does not provide a reference to the “small case series” described in the bullet above.

The European Centre for Disease Control and Prevention (ECDC) states that “it is currently unclear if transmission of the [monkeypox] virus can occur through semen and, if so, for how long. Therefore, as a precaution, condom use is recommended during sexual activities for 12 weeks after recovery from monkeypox disease.”¹²

The CDC states that “Safe sex, barrier practices (i.e., wearing condoms) are recommended, but there is little data to support the length of time patients need to wear condoms. Some other countries are recommending a minimum of 8 weeks, but we are still learning about this virus in the context of transmission through sexual contact.”¹³

Implications for Practice

Options for Post-Infection Management

Given no available scientific evidence on post-infection monkeypox transmission via genital excretions the following options are based on the precautionary principle at a time when public health authorities aim to contain the monkeypox outbreak and consideration for management from other jurisdictions.

Option 1: Monkeypox cases should utilize barrier contraception when engaging in receptive or insertive oral, anal, and/or vaginal intercourse for 12 weeks after the clinical resolution of their active infection.

- As we await more scientific evidence, this is the most cautious approach given the unknown risk of transmission through genital excretions.
- The PHAC⁷, WHO⁹, and UKHSA¹⁰, and ECDC¹² recommends the use of barrier conception during sexual intercourse for 12 weeks post-infection.

Option 2: Monkeypox cases should utilize barrier contraception when engaging in receptive or insertive oral, anal, and/or vaginal intercourse for 8 weeks after the clinical resolution of their active infection.

- This is a less cautious approach than Option 1 given the unknown risk of transmission through genital excretions but may be more acceptable to cases.
- The CDC recommends the use of barrier conception during sexual intercourse for 8 weeks post-infection.¹³

Option 3: Monkeypox cases can return to their regular sexual practices including those that may not utilize barrier methods for receptive or insertive oral, anal, and/or vaginal intercourse after the clinical resolution of their active infection.

- This is the least cautious approach given that the post-infection risk of monkeypox transmission through genital excretions is unknown.

Conclusion

Given the lack of evidence on the transmissibility of monkeypox through genital excretions, a cautious approach that recommends cases abstain from sexual intercourse during an active infection and utilize barrier contraception for 8 – 12 weeks following the clinical resolution of their infection is reasonable.

Further research and laboratory investigation of seminal and vaginal fluids from confirmed monkeypox cases during and after resolution of their clinical illness should be pursued to determine if viable monkeypox virus is present.

ARCHIVED

References

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Multi-jurisdictional monkeypox outbreak 2022 – what we know so far [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2022 Jul 21]. Available from: https://www.publichealthontario.ca/-/media/Documents/M/2022/wwksf-multi-jurisdictional-monkeypox-outbreak-2022.pdf?sc_lang=en
2. Bragazzi NL, Kong JD, Mahroum N, Tsigalou C, Khamisy-Farah R, Converti M, et al. Epidemiological trends and clinical features of the ongoing monkeypox epidemic: a preliminary pooled data analysis and literature review. *J Med Virol*. 2022 Jun 12 [Epub ahead of print]. Available from: <https://doi.org/10.1002/jmv.27931>
3. Antinori A, Mazzotta V, Vita S, Carletti F, Tacconi D, Lapini LE, et al. Epidemiological, clinical and virological characteristics of four cases of monkeypox support transmission through sexual contact, Italy, May 2022. *Euro Surveill*. 2022;27(22):2200421. Available from: <https://www.doi.org/10.2807/1560-7917.ES.2022.27.22.2200421>
4. Mileto D, Riva A, Cutrera M, Moschese D, Mancon A, Meroni L, et al. New challenges in human monkeypox outside Africa: a review and case report from Italy. *Travel Med Infect Dis*. 2022;49:102386. Available from: <https://doi.org/10.1016/j.tmaid.2022.102386>
5. Noe S, Zange S, Seilmaier M, Antwerpen MH, Fenzl T, Schneider J, et al. Clinical and virological features of first human monkeypox cases in Germany. *Res Sq* [Preprint]. 2022 Jun 6 [cited 2022 Jul 21]. Available from: <https://doi.org/10.21203/rs.3.rs-1725831/v1>
6. Heskin J, Belfield A, Milne C, Brown N, Walters Y, Scott C, et al. Transmission of monkeypox virus through sexual contact - a novel route of infection. *J Infect*. 2022 Jun 1 [Epub ahead of print]. Available from: <https://www.doi.org/10.1016/j.jinf.2022.05.028>
7. Public Health Agency of Canada. Monkeypox: public health management of cases and contacts in Canada [Internet]. Ottawa, ON: Government of Canada; 2022 [modified 2022 Jun 21; cited 2022 Jul 7]. Available from: <https://www.canada.ca/en/public-health/services/diseases/monkeypox/health-professionals/management-cases-contacts.html>
8. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Foodborne, Waterborne, and Environmental Diseases (DFWED, ed. Monkeypox. June 9 ed.). Isolation and infection control: home [Internet]. Atlanta, GA: CDC; 2022 [modified 2022 Jun 16; cited 2022 Jul 21]. Available from: <https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-home.html>
9. World Health Organization. Clinical management and infection prevention and control for monkeypox: interim rapid response guidance, 10 June 2022 [Internet]. Geneva: WHO; 2022 [cited 2022 Jul 21]. Available from: <https://www.who.int/publications/i/item/WHO-MPX-Clinical-and-IPC-2022.1>
10. UK. Department of Health and Social Care. Principles for monkeypox control in the UK: 4 nations consensus statement [Internet]. London: Crown Copyright; 2022 [cited 2022 Jul 26]. Available from: <https://www.gov.uk/government/publications/principles-for-monkeypox-control-in-the-uk-4-nations-consensus-statement/principles-for-monkeypox-control-in-the-uk-4-nations-consensus-statement>

11. World Health Organization. Multi-country monkeypox outbreak: situation update: 17 June 2022 [Internet]. Geneva: WHO; 2022 [cited 2022 Jul 21]. Available from: <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON393>
12. European Centre for Disease Prevention and Control; World Health Organization Regional Office for Europe; Salvi C (WHO/Europe), Schittecatte G (ECDC). Interim advice on risk communication and community engagement during the monkeypox outbreak in Europe, 2022: joint report by WHO Regional office for Europe/ECDC [Internet]. Stockholm: ECDPC; 2022 [cited 2022 Jul 21]. Available from: <https://www.ecdc.europa.eu/en/monkeypox/questions-and-answers>
13. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases, Division of Foodborne, Waterborne, and Environmental Diseases. Monkeypox: clinician FAQs [Internet]. Atlanta, GA: CDC; 2022 [modified 2022 Jul 5; cited 2022 Jul 21]. Available from: <https://www.cdc.gov/poxvirus/monkeypox/clinicians/faq.html>

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Monkeypox transmission through genital excretions. Toronto, ON: Queen's Printer for Ontario; 2022.

Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario's government, public health organizations and health care providers. PHO's work is guided by the current best available evidence at the time of publication. The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use. This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca.

©Queen's Printer for Ontario, 2022

Ontario 